history, and a brief statement of geologic and economic conditions of each. It forms an invaluable book of reference for everyone interested in the copper industry. The data are brought up to July, 1911.

A. D. B.

The Relation of Bornite and Chalcocite in the Copper Ores of the Virgilina District of North Carolina and Virginia. By FRANCIS BAKER LANEY. *Proc. U.S. National Museum*, XL. Washington, 1911. Pp. 523–24; pls. 63–69.

After a brief discussion of the geology of the region the author describes sections of the ores from a microscopic study. None of the bornite appears to be secondary. The chalcocite occurs as secondary veinlets in the bornite, and as intergrowths with bornite showing that in the latter case the two minerals formed simultaneously. The author confirms Graton's view that the chalcocite is primary, and the evidence is convincing. If, however, the ore deposits are older than the metamorphism, the same result could arise from the recrystallization of a secondary ore. This possibility has not been discussed but is suggested by the work of Emmons in Maine and in the Ducktown region.

A. D. B.

Iron Mines and Mining in New Jersey. By W. S. BAYLEY. Geological Survey of New Jersey, Vol. VIII, 1910. Pp. 512; pls. 13; maps 1; figs. 31.

The report gives a brief history of iron mining in New Jersey since its initiation in 1685. A brief outline of the geology of New Jersey pertinent to the subject follows, and the remainder of the report deals with the iron ores themselves. These are of four types, bog ore, limonite, red hematite, and magnetite. In early years considerable bog ore was utilized. Later, the limonites became of importance. At present, the magnetites are mined almost exclusively. The ores are described separately, as to their appearance, chemical composition, manner of occurrence, origin, and production. Much space is given to the description and history of individual mines. H. C. C.

The Mineral Production of Virginia during 1909 and 1910, Biennial Report on. Virginia Geological Survey Bulletin No. 6. Pp.123.

The mineral production for 1909 and 1910 is summarized, and compared with that for several previous years. Iron, coal, and clay are of major importance. The production of most of the substances mined

is nearly stationary or is decreasing, except in the case of coal. About six and one-half million tons of coal were mined in 1910, as against four and three-quarter million tons in 1909. H. C. C.

Annual Report of the Bureau of Mines, Ontario. Vol. XX, Part 1, 1911. Pp. 284; figs. 39; pls. 11; maps 4.

The mineral production of Ontario for 1910 is reviewed, and compared with the productions for the past five years. Most noteworthy is the great increase in the amount of silver mined in the Cobalt district, an increase of over $3,000,000 above that of the previous year. This raises the production from these mines to over $15,000,000 for 1910, and places Canada third in rank among the silver-producing countries of the world. The value of the nickel from the Sudbury mines also reaches over $4,000,000 in 1910, an increase of more than $1,200,000 above the previous year.

The remainder of the report contains the following papers: "Mining Accidents," by E. T. Corkill, pp. 59–85; "Mines of Ontario," by E. T. Corkill, pp. 86–118; "Silver in the Thunder Bay District," by N. L. Bowen, pp. 119–32; "The Sturgeon Lake Gold Field," by E. S. Moore, pp. 133–57; "Gold Fields of Lake of the Woods, Manitou, and Dryden," by A. L. Parsons, pp. 158–98; "Vermilion Lake Pyrite Deposits," by E. S. Moore, pp. 199–213; "Iron and Lignite in the Mattagami Basin," by M. B. Baker, pp. 214–46; "Notes on the Salt Industry of Ontario," by N. L. Bowen, pp. 247–58; "A Geological Trip in Scotland," by W. G. Miller, pp. 259–69; "The Mining Law of Ontario," by S. Price, pp. 270–79; "The Laurentian System," by W. G. Miller and C. W. Knight, pp. 280–84. H. C. C.

Notes on the Geology of the Swedish Magnetites. By D. H. NEWLAND. New York State Museum Bulletin 149, Pp. 107–19.

The author describes the nature, occurrence, and genesis of the principal magnetite deposits of Sweden, viewed while attending the International Geologic Congress at Stockholm in 1910, and compares them as far as possible with similar American deposits. While mentioning the bog-iron deposits and the low-phosphorous magnetites, he takes up in particular detail the great deposits of high-phosphorous magnetites at Kiruna and Gellivare. These ores occur in lenses, bands, and chimneys, as magmatic segregations from quartz porphyries and sodic syenites. The Kiruna ores are massive and non-granular, having been subjected